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(71) Applicant(s)

John Harold Pughe
Gwernawel, Darowen, MONTGOMERY, Powys,
SY20 8LP, United Kingdom

(72) Inventor(s)

John Harold Pughe

(74) Agent and/or Address for Service

David Pratt & Co
7 Parkhill Road, Sidcup, Kent, DA15 7NW,
United Kingdom

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(54) Portable shearing pen

(57) A portable sheep shearing assembly comprises a pen P, a trailer T, and means for detachably fixing the pen to the trailer in a transport position. The pen unit P comprises a base 1 and a plurality of walls 2 to 5 defining a closed working area within the base. The trailer T comprises an elongate frame member 12 having a front portion and a pair of wheels 15 mounted thereon adjacent to a rear portion. The assembly is such that, with the pen fixed to the trailer in the transport position, the centre of gravity of the pen and frame is in front of a line of contact between the wheels (15) and the ground, thereby reducing loading and unloading forces.

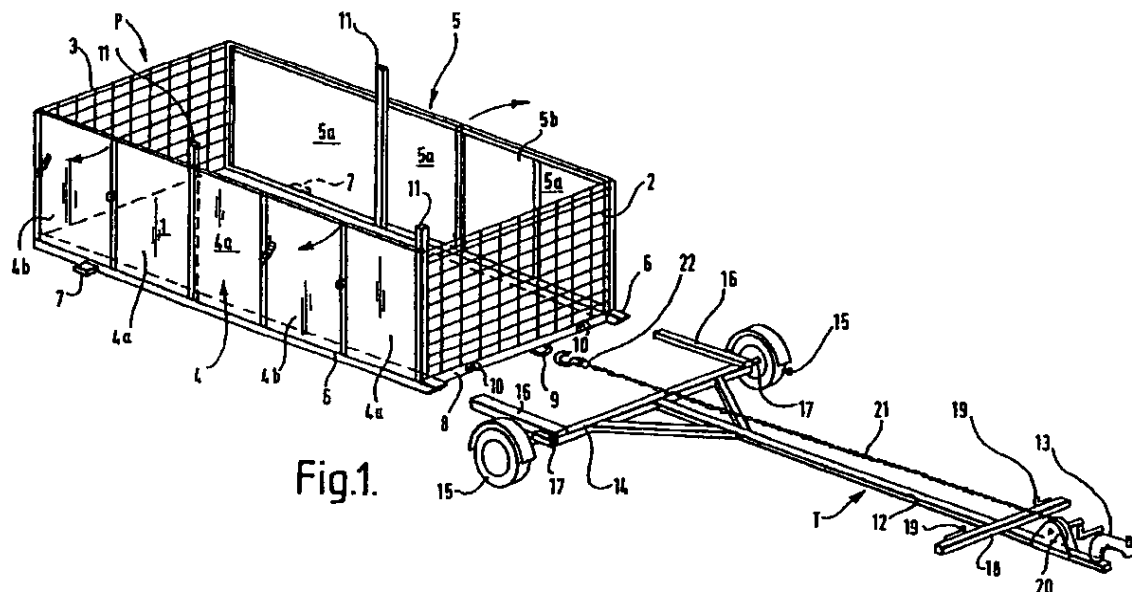
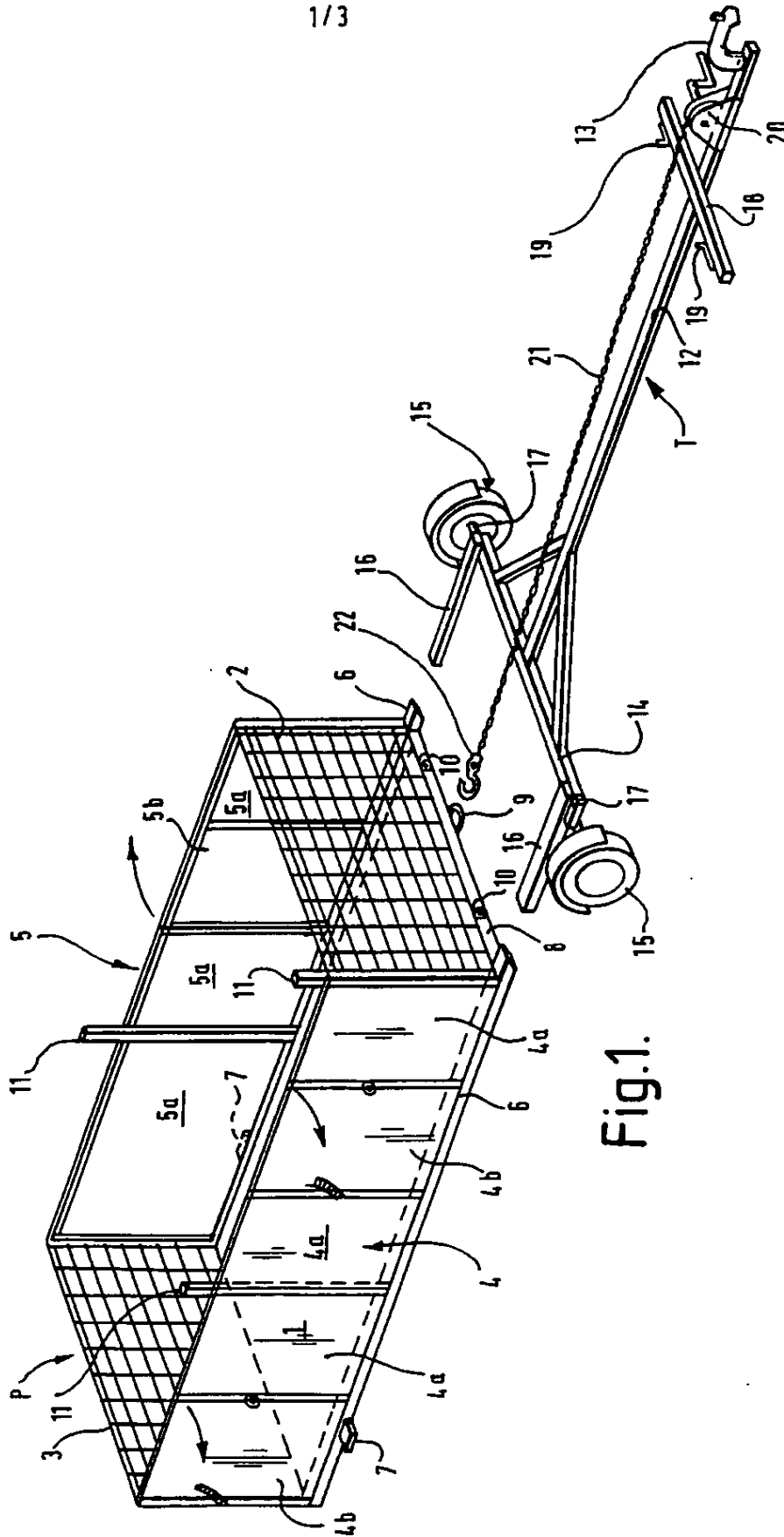
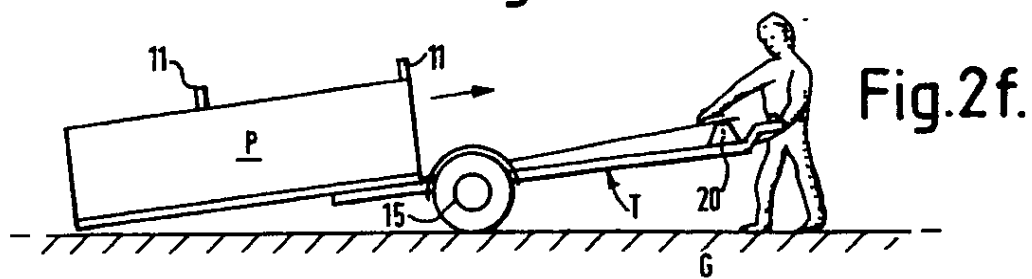
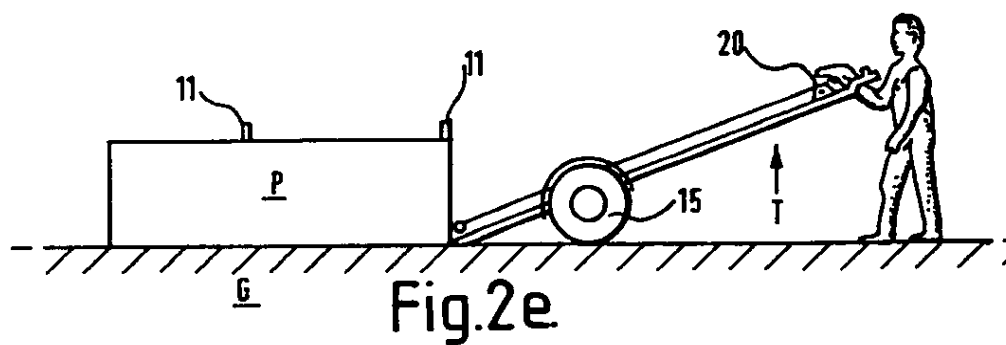
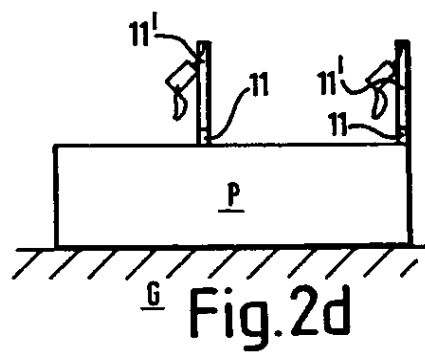
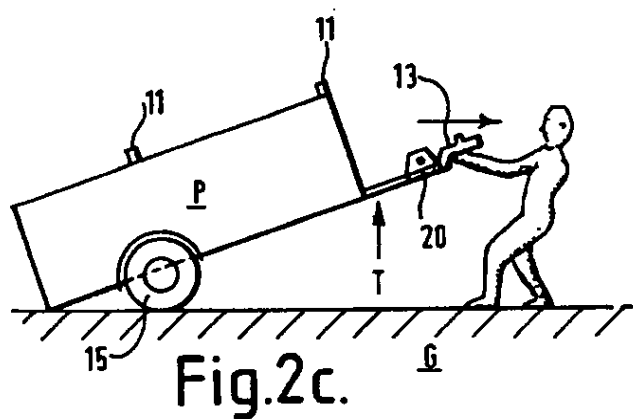
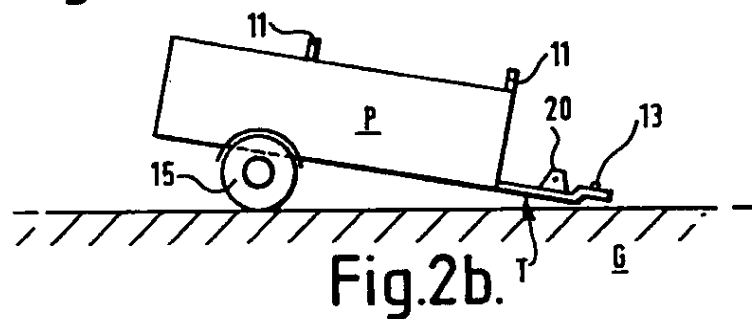
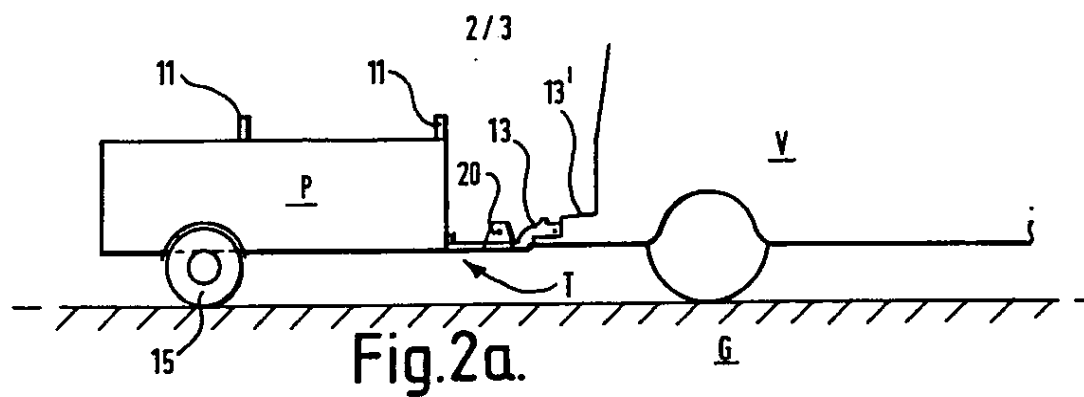
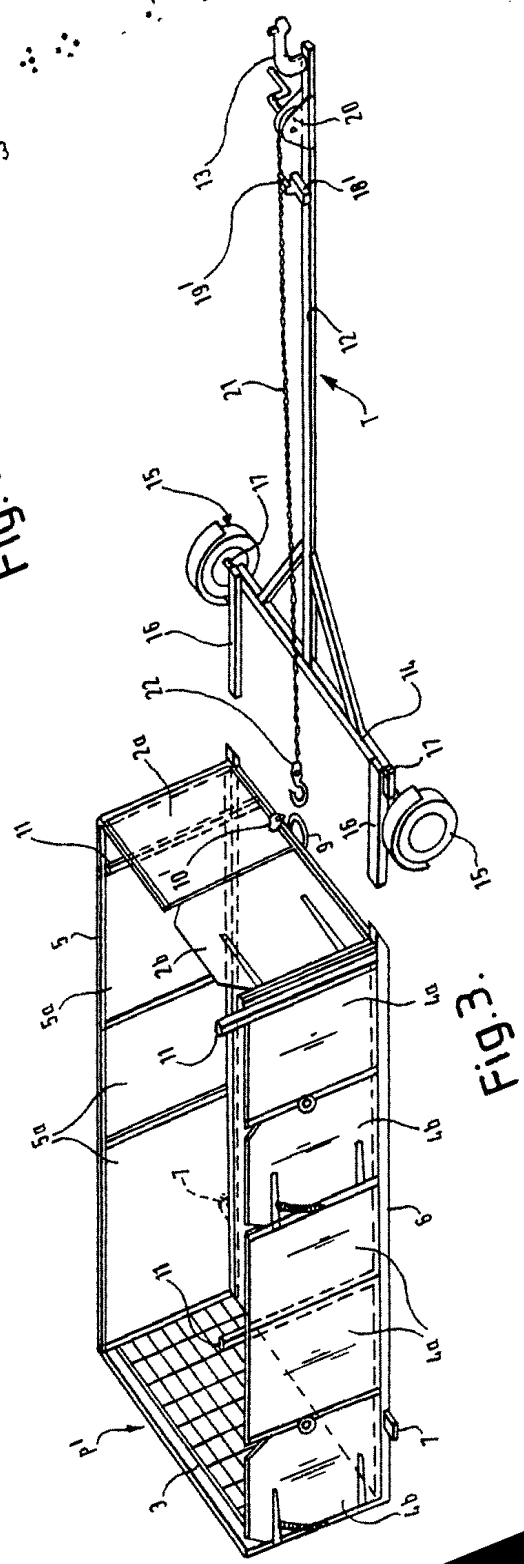
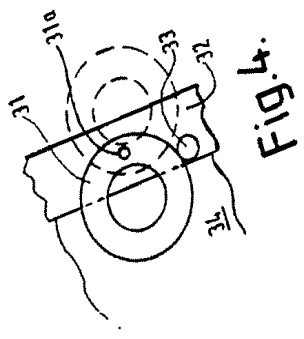


Fig.1.

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PORTABLE SHEARING PEN

This invention relates to a portable sheep shearing pen.

In recent years, the advent of small sheep farmers has led to a requirement for shearing contractors who go from farm to farm shearing sheep on a contract basis. This, in turn, has led to a requirement for a portable shearing pen that can be used by such contractors. A known type of portable pen is constituted by a simple rectangular unit which has to be manhandled into position in the field where shearing is to take place. Before this type of unit was introduced, it was common to use four 'hurdles' placed in a square formation to pen the sheep in. Farm sheds were also used.

Nowadays, there is a healthy business in contract shearing, and equipment is required which can be readily conveyed to and from shearing sites. One man operation is also desirable.

The present invention provides a portable sheep shearing assembly comprising a pen unit, a trailer unit, and means for detachably fixing the pen unit to the trailer unit in a transport position, the pen unit comprising a base and a plurality of walls defining a closed working area within the base, one of the walls being positioned at a first (the front) end of the pen unit, and the trailer unit comprising an elongate frame member having a front end portion and a pair of wheels mounted thereon adjacent to the other (rear) end portion for rotation about a common

axis, wherein the assembly is such that, with the pen unit fixed to the trailer unit in the transport position, said axis is positioned rearwardly of the centre of gravity of the pen unit by a first predetermined distance, and the front end portion of the frame member is positioned forwardly of the front end wall of the pen unit by a second predetermined distance, the first and second predetermined distances being such that the work required to pivot the assembly, about a line of contact between the wheels and the ground, by exerting an upwards force on the front end portion of the frame member is a minimum.

Advantageously, the base of the pen unit is rectangular, and there are four walls positioned at the edges of the base.

Conveniently, at least one of the walls, preferably a side wall, is provided with at least one door. The or each door may be spring biased towards its closed position, and may be openable outwardly away from the working area.

Preferably, the wheels are mounted on a cross beam positioned at the rear end portion of the frame member. A further cross beam may be provided at the front end portion of the frame member in such a position that the further cross beam is adjacent to the front end wall of the pen unit when the pen unit is fixed to the trailer unit in the transport position. Conveniently, the further cross beam and the front end portion of the pen unit are provided with inter-engageable locking means which constitute the means

for detachably fixing the pen unit to the trailer unit.

In a preferred embodiment, the pen unit and the trailer unit are provided with inter-engageable means for slidably engaging the pen unit with the trailer unit for facilitating the loading (and unloading) of the pen unit into (and out of) the transport position. Preferably, a pair of struts extending rearwardly from the first-mentioned cross beam of the trailer unit, and a pair of longitudinally-extending hollow beams associated with the base of the pen unit constitute said inter-engageable means.

In a preferred embodiment, means are provided for loading the pen unit into its transport position on the trailer unit. Conveniently, a hand winch and rope constitute said means, the hand winch being mounted on the front end portion of the frame member of the trailer unit, and the rope being detachably fixable to the front end portion of the pen unit.

Two forms of portable sheep shearing pen, each of which is constructed in accordance with the invention, will now be described in greater detail, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is a perspective view of the first form of pen;

Figs. 2a to 2f are schematic diagrams showing how the pen is unloaded from its transport position and positioned prior to sheep shearing, and then

- how it is loaded after shearing back into its transport position;
- Fig. 3 is a perspective view of the second form of pen; and
- Fig. 4 is an enlarged detail view showing how the doors of either of the pens are locked in their closed positions.

Referring to the drawings, Fig. 1 shows a portable sheep shearing pen constituted by a pen unit P and a trailer unit T. The pen unit P has a rectangular base (or floor) 1 made of expanded sheet steel, a pair of front and rear walls 2 and 3 made of steel mesh, and a pair of side walls 4 and 5. The end walls 2 and 3 are movable out of the generally vertical positions shown in Fig. 1, to enable sheep to enter the pen unit P, either by pivotally mounting their bottom edges to the base 1 of the pen unit, or by slidably mounting the end walls in grooves formed in the adjacent portions of the side walls 4 and 5. The base 1 is 10 feet in length and 5 feet in width. The walls 2 to 5 are 3 feet in height. The side wall 4 is constituted by three rectangular panels 4a made of plywood, and two doors 4b also made of plywood. Similarly, the side wall 5 is constituted by three rectangular panels 5a made of plywood, and one door 5b also made of plywood. Each of the doors 4b and 5b opens outwardly, and is spring mounted so that it is biased towards its closed position. Each of the doors 4b and 5b is provided with a washer lock (not shown) for

locking that door in its closed position.

The base 1 of the pen unit P is mounted on a pair of hollow beams 6 made of steel and positioned beneath the side walls 4 and 5. Towards the rear, each of the beams 6 is provided with an outwardly-extending guide block 7 made of steel. A cross beam 8, made of steel, is positioned at the front end of the base 1, beneath the front end wall 2. The cross beam 8 carries a shackle 9 positioned at its centre, and a respective locking block 10 is positioned on either side of the shackle.

Three hollow posts 11 made of steel are provided in the pen unit P, two of the posts being positioned alongside the side wall 4, the remaining post being positioned alongside the side wall 5. In use, as is explained below, the posts 11 support mechanical shearers 11' (shown schematically in Fig. 2d).

The trailer unit T includes a main frame member 12 which carries a tow bar 13 for attachment to a complementary tow bar member 13' (shown schematically in Fig. 2a) at the rear of a tractor, jeep or other towing vehicle V (shown schematically in Fig. 2a). The frame member 12 supports a cross beam 14, at the ends of which are mounted wheels 15. The cross beam 14 thus acts as an axle about which the wheels 15 rotate. A respective strut 16 extends rearwardly from each end of the cross beam 14, these struts being sized to be a sliding fit within the hollow beams 6 of the pen unit P. Each of the struts 16 carries an outwardly-extending guide block 17 at its front

end (that is to say that end which is attached to the cross beam 14. These guide blocks 17 co-operate, as is described below with the guide blocks 7 of the pen unit P.

Adjacent to the tow bar 13, the frame member 12 carries another cross beam 18, this cross beam supporting a pair of locking members 19 which, in use, engage with the locking blocks 10 of the pen unit P, as is described below. A hand winch 20 is supported on the frame member 12, the hand winch being positioned between the cross beam 18 and the tow bar 13. A wire rope (or strap) 21 is associated with the hand winch 20, the free end of the wire rope being attached to a hook 22 which is engageable with the shackle 9 of the pen unit P. The frame member 12, the cross beams 14 and 18, the struts 16 and the guide blocks 17 are all made of steel. The cross beam 18 is positioned 5 feet 6 inches forwardly of the axle (the cross beam) 14, and the free end portion of the frame member extends 26 inches forwardly of the cross beam 18.

When a shearing contractor needs to convey the portable pen to a shearing site, the pen unit P is mounted on the trailer unit T (as is described below with reference to Figs. 2e and 2f). In this position (see Fig. 2a), the hook 22 is in engagement with the shackle 9, and the wire rope 21 is winched in to hold the pen unit P firmly on the trailer unit T. The tow bar 13 is connected to the complementary tow bar member 13' of the towing vehicle V.

The portable pen can then be towed to the shearing site, where the tow bar 13 is released from the member 13'

(see Fig. 2b). The operator then lifts the front of the trailer unit T (see Fig. 2c), and the pen unit P is slid off the trailer unit (after the locking blocks 10 of the pen unit are disengaged from the locking members 19 of the trailer unit). The sliding movement of the pen unit P is guided by the interengagement of the struts 16 and the hollow beams 6, and may be reliably controlled by unwinding the wire rope 21 using the hand winch 20. Because of the geometry of the trailer axle 14 relative to the centre of gravity of the pen unit P (the axle being positioned 6 inches rearwardly of the pen unit centre of gravity), and the length of the moment arm (7 feet 8 inches) from the axle to the free end of the frame member 12, the tilting of the pen unit can be accomplished easily by a single operator.

As shown in Fig. 2d, the base 1 of the pen unit P then rests on the ground G. The mechanical shearers 11' are then mounted in the posts 11, and the sheep to be sheared are led into the pen unit P through the ends, after the end walls 2 and 3 are lowered or removed. When the sheep are safely in the pen unit P, the end walls 2 and 3 are replaced to form an enclosure for holding the sheep until they are to be sheared. To be sheared, a sheep can be removed by the shearers via one of the hinged, spring-operated doors 4b, 5b. Shearing then takes place outside the pen unit P, with up to three sheep being sheared at any one time using the mechanical shearers 11' mounted in the posts 11. Once sheared, the sheep are released.

At the end of the shearing operation, the struts 16 of the trailer unit T are lined up with the hollow beams 6 of the pen unit P. The wire rope 21 is then unwound, using the hand winch 20, until the hook 22 can be engaged with the shackle 9. The operator then turns the hand winch 20 to wind on the wire rope 21, thereby sliding the pen unit P back onto the trailer unit T. When the guide blocks 7 of the pen unit P engage with the guide blocks 17 of the trailer unit T, the locking blocks 10 are engaged with the locking members 19, so that the pen unit is firmly mounted on the trailer unit. The tow bar 13 is then connected to the tow bar member 13', ready for the portable pen to be transported to the next shearing venue.

Fig. 3 shows a modified form of the portable shearing pen of Figs. 1 and 2. As this pen is similar to that of Figs. 1 and 2, like reference numerals are used for like parts, and only the modifications will be described. The main difference between the two embodiments is in the positioning of the doors of their pen units. Thus, the pen unit P' of Fig. 3 has two doors 4b positioned in the side wall 4, and one door 2b in the front wall 2. There are no doors in the side wall 5. The front wall 2 is constituted by a plywood panel 2a and by the door 2b (also made of plywood). This front wall 2 can be swapped with the rear wall 3 which (like the equivalent part of the embodiment of Figs. 1 and 2) is made of steel mesh. By providing for this swapping of the front and rear walls 2 and 3, different configurations of the pen are made easily available to suit

different farm layouts.

A second modification is to replace the cross beam 18 and locking bolts 19 of Fig. 1 by a short cross beam 18' and by a single spring-loaded locking bolt 19'. This bolt 19' co-operates with a single locking plate 10' positioned adjacent to the shackle 9 provided on the cross beam 8 at the front of the base 1 of the pen unit P'.

A third modification is to fix one of the hollow posts 11 to the panel 2a forming part of the front wall 2 of the pen unit P'. Here again, this increases the versatility of the pen, permitting a greater variation in the positioning of the mechanical shearers (not shown in Fig. 3, but similar to the shearers 11' of Fig. 1).

Fig. 4 illustrates how the doors of either of the pen units P and P' are locked, and shows a large washer 31 which is pivotally mounted, at 31a, on a door post 32. The washer 31 is pivotable towards, and away from, a stop 33 provided on the post 32 so as to lock the door 34 closed when in the position shown in full lines, and so as to permit the door to swing open when in the position shown in dashed lines. This type of locking mechanism is a simple and effective way of locking the doors.

Operation of the pen unit P' of Fig. 3 is substantially the same as that described above with reference to the pen unit P of Figs. 1 and 2.

It will be apparent that each of the portable shearing pens described above has the advantage of being easy to load and unload by a single operator, so that it

-10-

can be easily transported to shearing sites and set up for operation. It also provides a convenient area that is enclosed to keep sheep in whilst waiting to be sheared.

CLAIMS:

1. A portable sheep shearing assembly comprising a pen unit, a trailer unit, and means for detachably fixing the pen unit to the trailer unit in a transport position, the pen unit comprising a base and a plurality of walls defining a closed working area within the base, one of the walls being positioned at a first (the front) end of the pen unit, and the trailer unit comprising an elongate frame member having a front end portion and a pair of wheels mounted thereon adjacent to the other (rear) end portion for rotation about a common axis, wherein the assembly is such that, with the pen unit fixed to the trailer unit in the transport position, said axis is positioned rearwardly of the centre of gravity of the pen unit by a first predetermined distance, and the front end portion of the frame member is positioned forwardly of the front end wall of the pen unit by a second predetermined distance, the first and second predetermined distances being such that the work required to pivot the assembly, about a line of contact between the wheels and the ground, by exerting an upwards force on the front end portion of the frame member is a minimum.
2. An assembly as claimed in claim 1, wherein the base of the pen unit is rectangular, and there are four walls positioned at the edges of the base.
3. An assembly as claimed in claim 1 or claim 2, wherein at least one of the walls is provided with at least one door.

4. An assembly as claimed in claim 3 when appendant to claim 2, wherein at least one of the side walls is provided with at least one door.
5. An assembly as claimed in claim 3 or claim 4, wherein the or each door is spring biased towards its closed position, and is openable outwardly away from the working area.
6. An assembly as claimed in any one of claims 1 to 5, wherein the wheels are mounted on a cross beam positioned at the rear end portion of the frame member.
7. An assembly as claimed in claim 6, wherein a further cross beam is provided at the front end portion of the frame member in such a position that the further cross beam is adjacent to the front end wall of the pen unit when the pen unit is fixed to the trailer unit in the transport position.
8. An assembly as claimed in claim 7, wherein the further cross beam and the front end portion of the pen unit are provided with inter-engageable locking means which constitute the means for detachably fixing the pen unit to the trailer unit.
9. An assembly as claimed in any one of claims 1 to 8, wherein the pen unit and the trailer unit are provided with inter-engageable means for slidably engaging the pen unit with the trailer unit for facilitating the loading (and unloading) of the pen unit into (and out of) the transport position.
10. An assembly as claimed in any one of claim 9 when

appendant to claim 6, wherein a pair of struts extending rearwardly from the first-mentioned cross beam of the trailer unit, and a pair of longitudinally-extending hollow beams associated with the base of the pen unit constitute said inter-engageable means.

11. An assembly as claimed in any one of claims 1 to 10, wherein means are provided for loading the pen unit into its transport position on the trailer unit.

12. An assembly as claimed in claim 1, wherein a hand winch and rope constitute said means, the hand winch being mounted on the front end portion of the frame member of the trailer unit, and the rope being detachably fixable to the front end portion of the pen unit.

13. A portable sheep shearing assembly substantially as hereinbefore described with reference to, and as illustrated by, Figs. 1, 2 and 4 or Figs 2, 3 and 4 of the accompanying drawings.

Patents Act 1977**Examiner's report to the Comptroller under Section 17
(The Search report)**

- 14 -

Application number
GB 9410253.0**Relevant Technical Fields**(i) UK Cl (Ed.M) A1M (MAP, MAS) B7B (BTL2, BTF2,
BCHB)

(ii) Int Cl (Ed.5) A01K, A01L, B60P, B62D, E04H

Search Examiner
R D CAVILDate of completion of Search
17 AUGUST 1994**Databases (see below)**(i) UK Patent Office collections of GB, EP, WO and US patent
specifications.

(ii) ONLINE DATABASES: WPI

Documents considered relevant
following a search in respect of
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